Enterprise Geographic Information Systems in Colorado

GIS Town Hall – October 14, 2008

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Michael Locatis
State Chief Information Officer

Jon Gottsegen
State GIS Coordinator

Outline

- OIT mission
- GIS context
- IT banding
- GIS banding
- Core vs. LoB dedicated functions
- Banding governance applied to GIS

Mission

- **Make wise investments**
- **Improve services**
- **Secure our data**
- **Deliver projects**
- **Develop and keep good people**
- **Reduce waste**

"Never doubt that a small group of committed people can change the world … indeed, that is the only thing that ever has" **- Margaret Mead**

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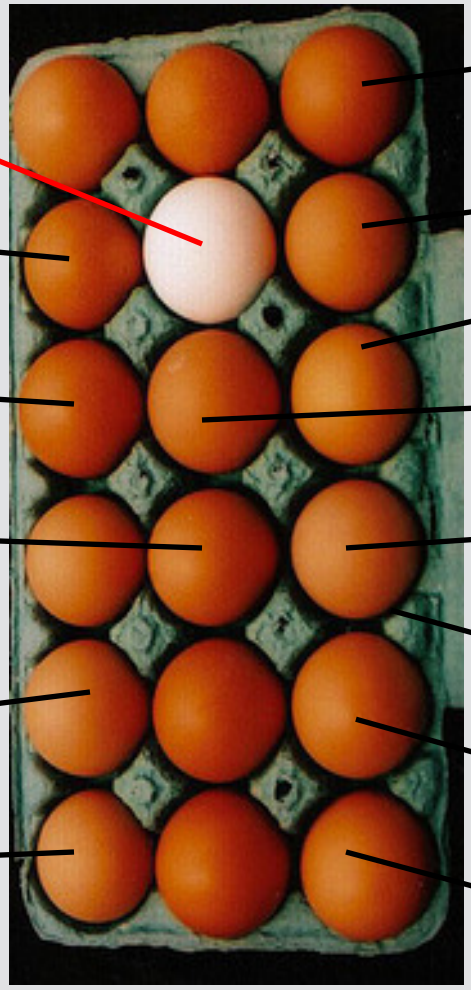
Challenging Departmental Uniqueness



Line of Business Applications

Enterprise applications

Licensing / procurement

Voice / data network

Disaster recovery

Reporting platforms

Data Management

Data Centers

Security

Desktop Services

Content Management

Program / Project Management

Email

Web Development

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Legacy - Silo Approach to IT

HD — Help Desk Support Function

$$$ — IT Procurement

Data Center Management

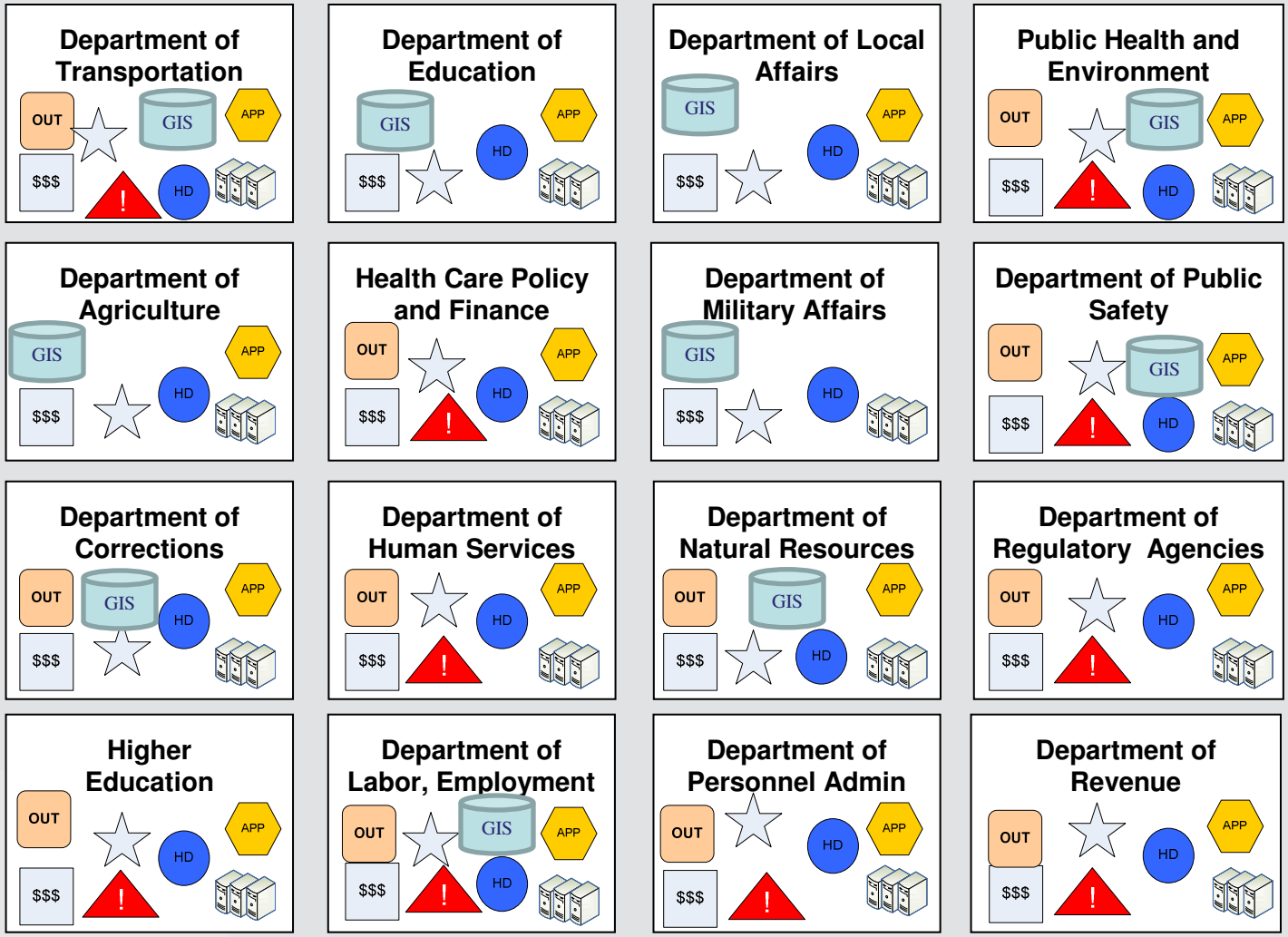
APP — Application Development

! — Major Project

OUT — Outsourced Application or Service

Security

GIS — GIS



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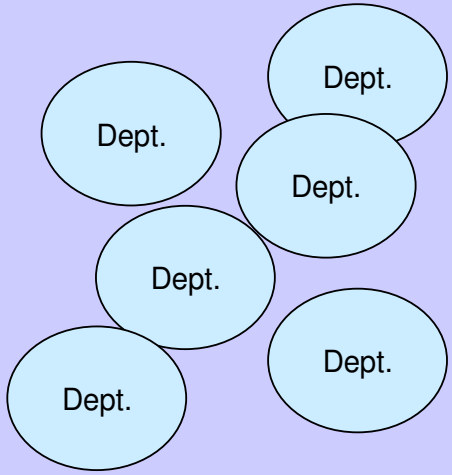
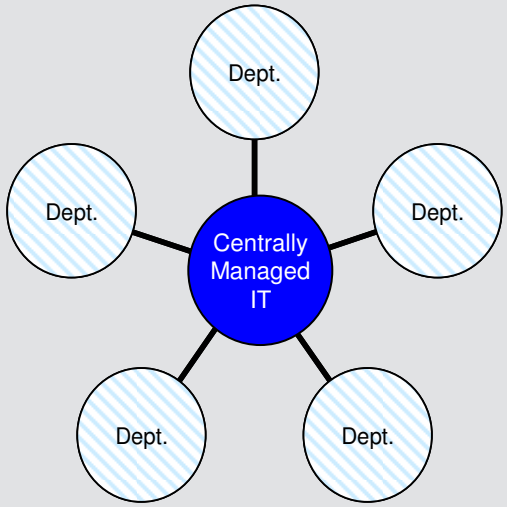
Senate Bill 2008-155 – IT Consolidation

Consolidation focuses on transforming the state from a highly decentralized model to a more effective centrally managed IT structure.

Decentralized (CURRENT)	***Consolidated Model (TARGET)***
This model creates an environment of non-standardized processes and systems. Services are inconsistently delivered and risks of operational failure are much higher.	The consolidated model allows more control of IT assets, personnel, and investments. This model allows Departments to focus on business operations while the consolidated IT organization focuses on enterprise service delivery and leveraging efficiencies.
	
Commonly leveraged when central control is limited.	*Commonly leveraged for a larger enterprises.*

- Implement a consolidated model to manage IT assets and personnel.
- Modeled on other successful state government IT consolidations.
- Strategic decisions will be made for the enterprise and individual departments.
- IT purchasing and procurement will be centralized to improve enterprise buying capabilities.
- A focused effort on managing IT personnel and staff will allow for improved recruiting, retention, and professional development.
- Manage projects through best practice EGC model.

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Senate Bill 2008-155 transfers roles and responsibilities for GIS coordination to OIT

24-37.5-111. Geographic information system - coordinator - statewide plan. ON AND AFTER JULY 1, 2008, ALL DUTIES AND RESPONSIBILITIES FOR STATEWIDE GEOGRAPHIC INFORMATION SYSTEM COORDINATION SHALL BE TRANSFERRED FROM THE DEPARTMENT OF LOCAL AFFAIRS TO THE OFFICE. THE OFFICE SHALL DEVELOP A STATEWIDE GEOGRAPHIC INFORMATION SYSTEM PLAN ON OR BEFORE JULY 1, 2010, AND SUBMIT SUCH PLAN TO THE GOVERNOR AND TO THE STATE, VETERANS, AND MILITARY AFFAIRS COMMITTEES OF THE SENATE AND THE HOUSE OF REPRESENTATIVES, OR THEIR SUCCESSOR COMMITTEES.

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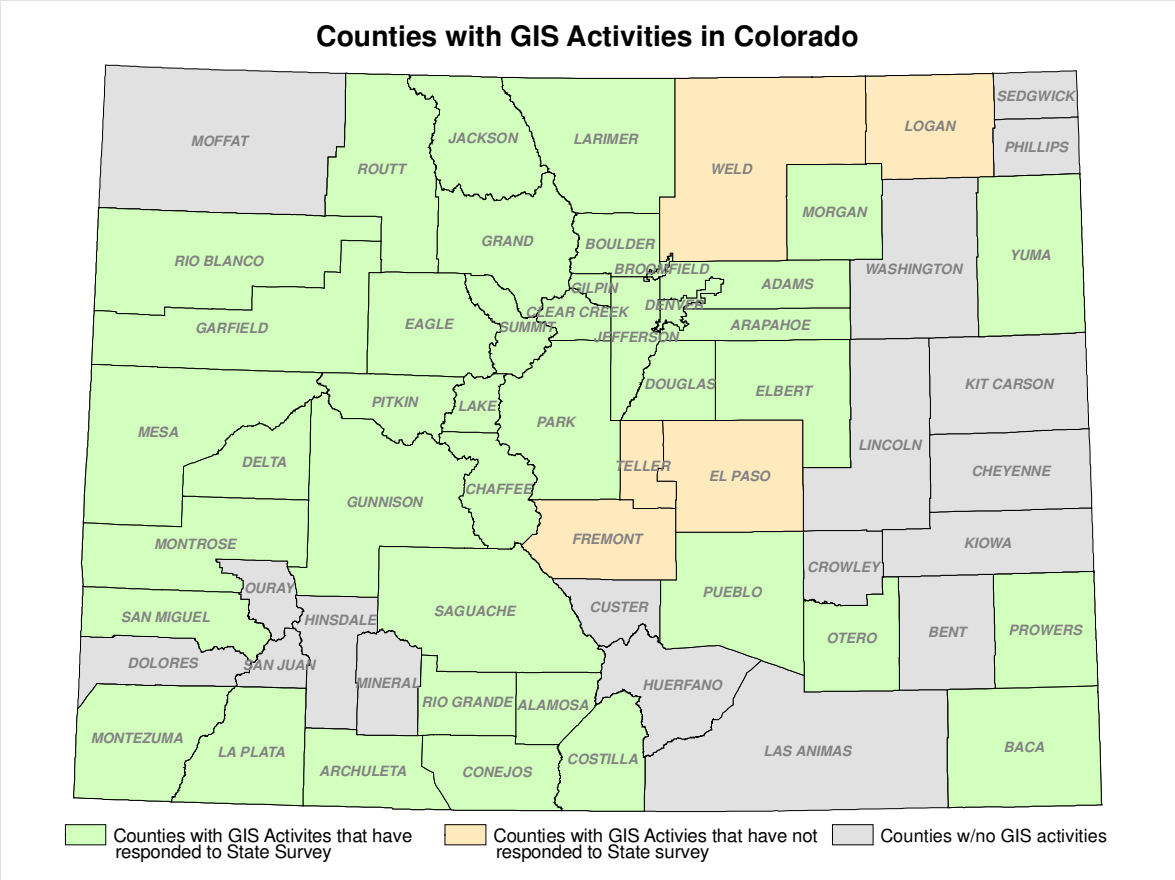
Current State

- Multiple state agencies have interests in geospatial information technologies:
  - **Users**: Transportation, Public Health and Env., Natural Resources, Local Affairs, Public Safety, Agriculture
  - **Limited use or consumers of external services**: Corrections, Reg. Agencies, Labor and Employment, Economic Devel., Leg. Council
  - **Interested**: Governor's Energy Office, Revenue, Sec of State, Historical Society
- Over 40 counties and multiple municipalities implement geospatial information technologies

Current State



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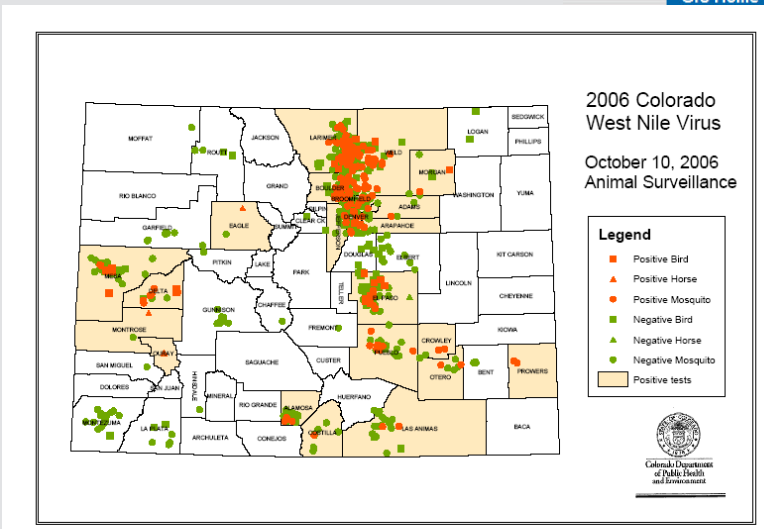
Department GIS Activities

- Some excellent GIS operations among state and local (and federal) governments
- Colorado Dept. of Public Health and Environment (CDPHE)
- Colorado Dept. of Natural Resources (DNR)
- Colorado Department of Transportation (CDOT)
- Colorado Dept. of Public Safety (CDPS)
  - Mobile mapping

Department GIS Activities

- CDPHE – epidemiology, disease surveillance, many other applications, lead public health GIS user group



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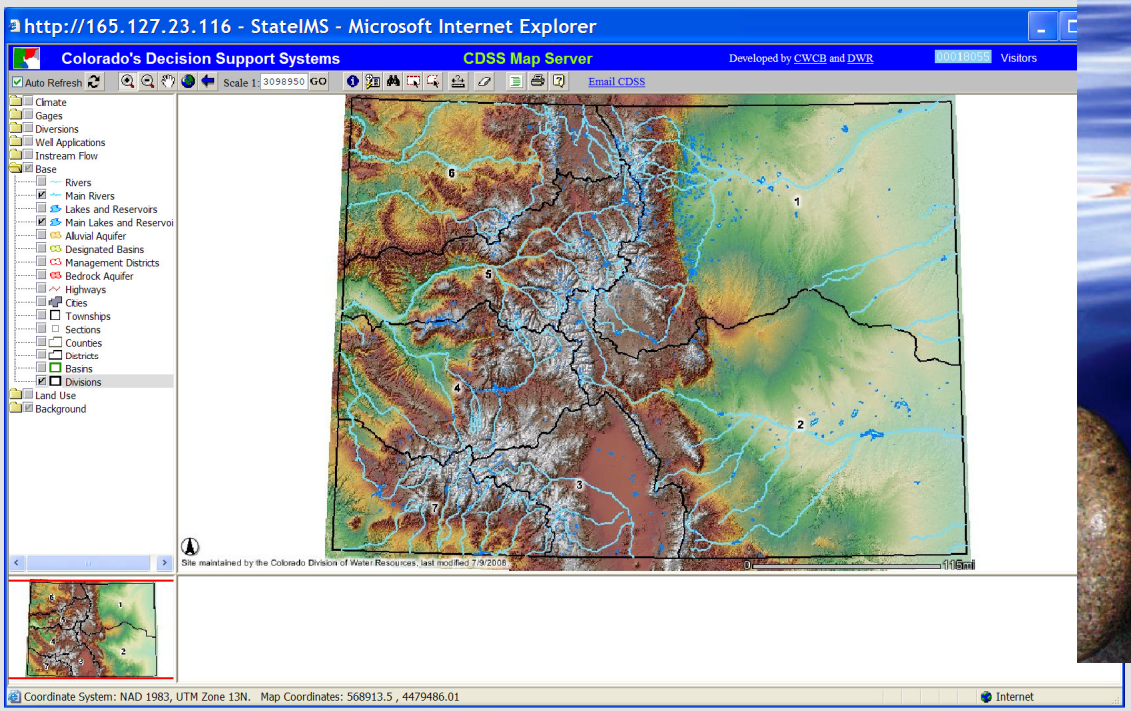
Department GIS Activities

- DNR – Many applications within divisions in dept., showing spatially enabled DSS for water planning. DNR also taking stewardship role for NHD



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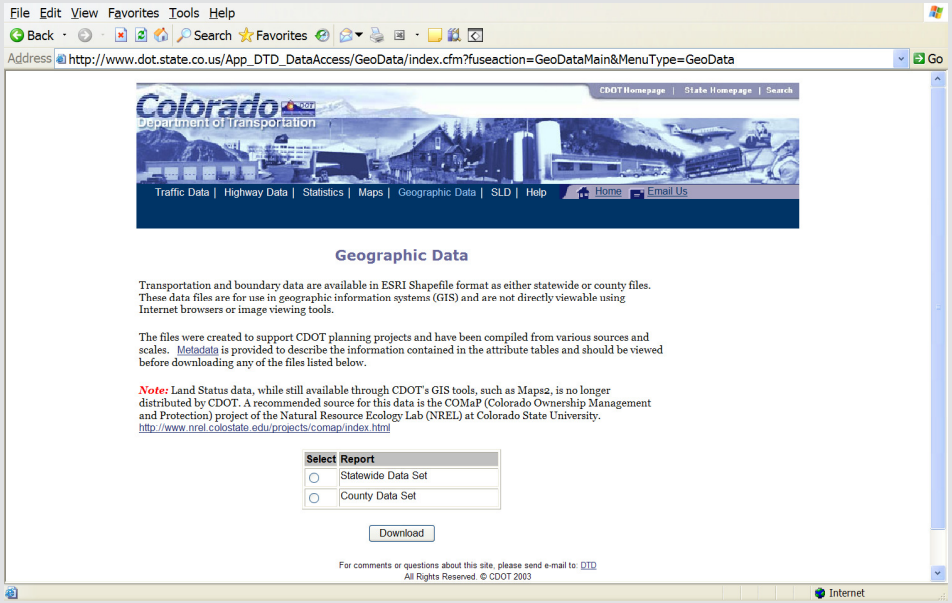
Department GIS Activities

- CDOT – Makes its data available on its web site



- CDPS – Embarking on mobile mapping effort. (No graphics yet)

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Needs Identified in Two Independent Assessments in Colorado

- Applied Geographics Emergency Management Assessment, 2007
- CH2MHill Assessment, 2007

- Consolidate software license purchasing and maintenance
- Improve governance by creating a GIS Council
- Create uniform policies for data development or sharing
- Control spatial information resources, including personnel, software, data and applications
- Statewide policy regarding GIS data organization
- Improve sharing of data between state departments
- Promote state data stewards
- Leverage GIS "services" which are currently replicated numerous times among State departments

Other Factors

- Government Efficiency Management Survey (Governor initiative) GIS report identified redundancies, inefficiencies
- Expand visibility of geospatial data across agencies to provide better business analytical capability
- Nimble resource to respond to Governor requests for geospatial information or analyses
- NASCIO, "Where's the Data? Show Me" - Maximizing the Investment in State Geospatial Resources

  "Geospatial resources are so important, and touch so many areas of government that they *must be* managed as an *enterprise resource* within the greater scope of *enterprise architecture*"

Strategic Plan

Strategic Goal #1:	
Support **better stewardsh**	rosperity, safety and services for our citizens by	city across the state.
Strategic Goal #2:	
Make government more ef	**rdinated use of** **geospatial technologies** a
Strategic Goal #3:	
Enhance the information b	by **improving the** **quality and availability o**	**ces** to support decision-makers and other	, in concert with the state's enterprise architectu	).

To Advance Statewide GIS Coordination and Infrastructure

Colorado GIS Coordination Strategic Plan

DRAFT

Version 1.0

Produced by Applied Geographics, Inc.
For the
State of Colorado, GIS Coordinator

February 2008

Applied Geographics, Inc.
Empowering People with Spatial Solutions

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Strategic Plan

- Improve **geospatial capacity** across the state
- Improve and expand **communications, awareness, and knowledge** about GIS
- Strengthen geospatial **applications** across the state
- Provide guidance on **best practices** to GIS practitioners at all levels
- Establish formal **governance** for GIS coordination to establish greater accountability for achieving statewide objectives
- Implement policies and measures to **remove barriers** to geospatial data sharing and improve collaboration to strengthen GIS infrastructure and interoperability
- Promote an **enterprise architecture** approach to geospatial investments and developments that is integrated into the enterprise architecture of IT
- Establish a **repository of statewide geospatial data sets** from authoritative sources for prioritized features and data types
- Provide **easy and ubiquitous access** to geospatial data and metadata
- Recognize GIS as critical infrastructure and enable a Web **service–orientation** for basic GIS functions to meet statewide demand

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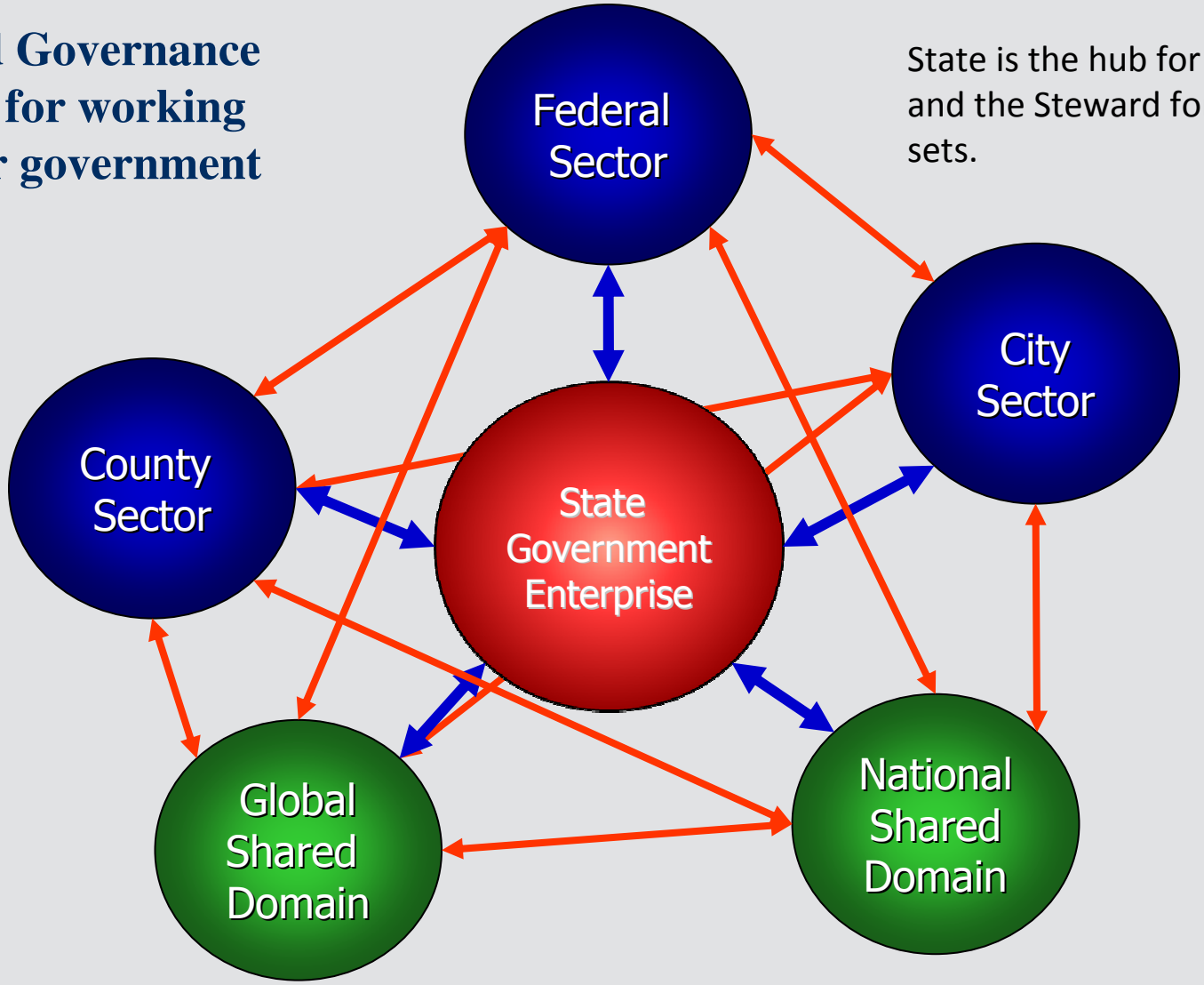
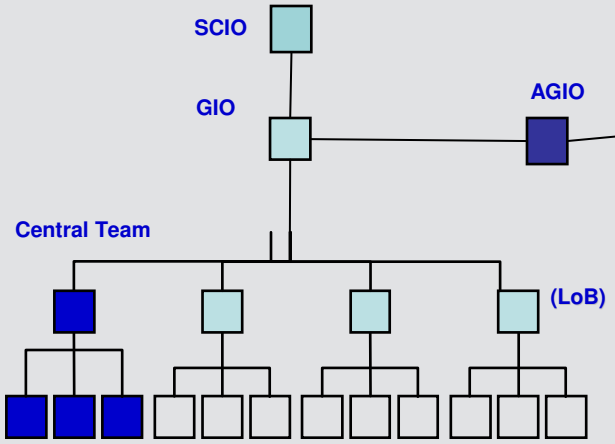
Federated Governance Structure for working with other government sectors



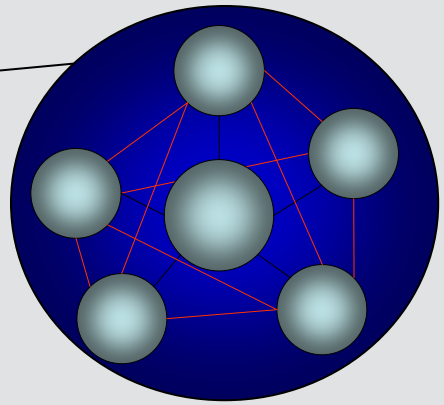
State is the hub for coordination and the Steward for key data sets.

Recommendation:
Get our internal affairs fixed first, then start leading the way with local and federal governments.

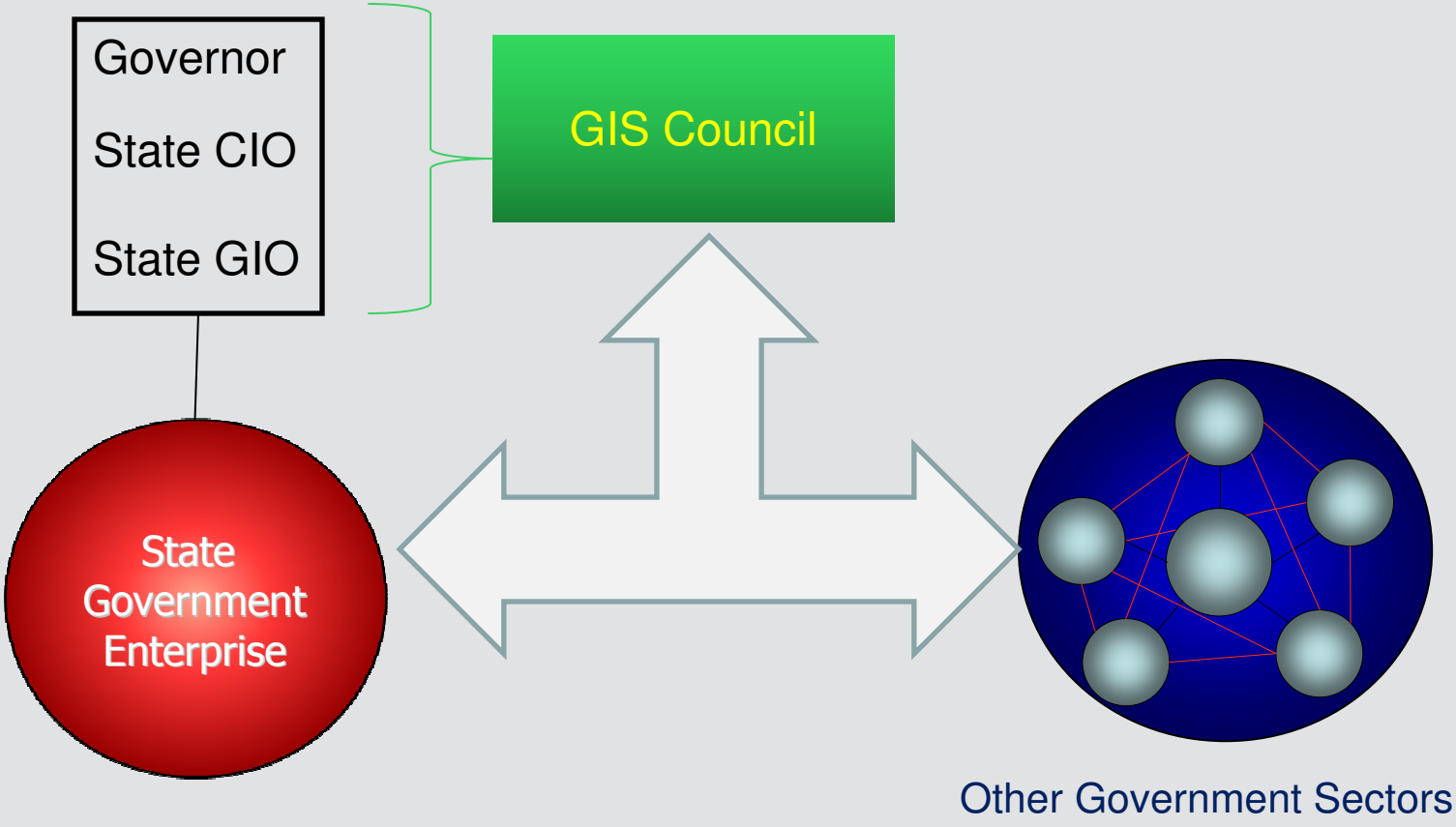
"Consolidated" internal model



"Federated" external model



GIS Council Role in the Federated Model

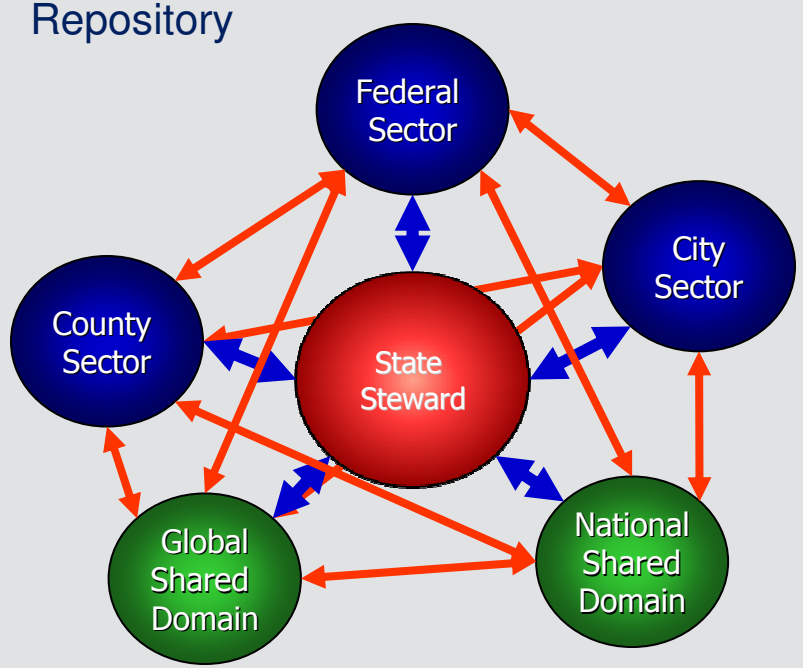


State Role as Data Stewards

Project Teams for each Framework Layer have representatives from all sectors. The team is lead by a State SME and is coordinated by the State GIO.

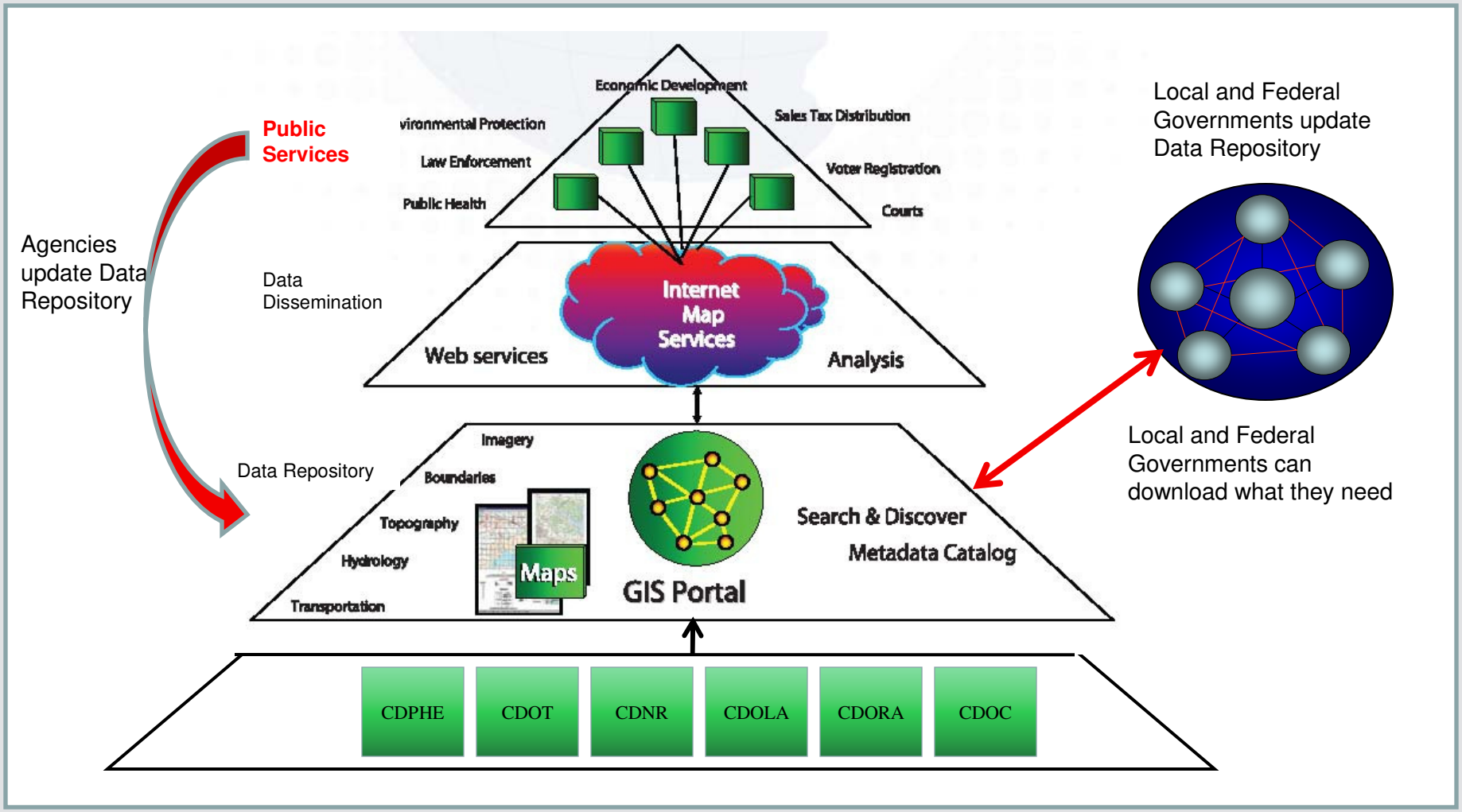
Data is created by multiple groups in many sectors and passed to the State Repository

- Cadastral
- Elevation
- Geodetic
- Geology
- Hydrology
- Land Use
- Ortho Imagery
- Transportation
- Other Key Base Layers



Other Government Sectors

Portal services provided by State

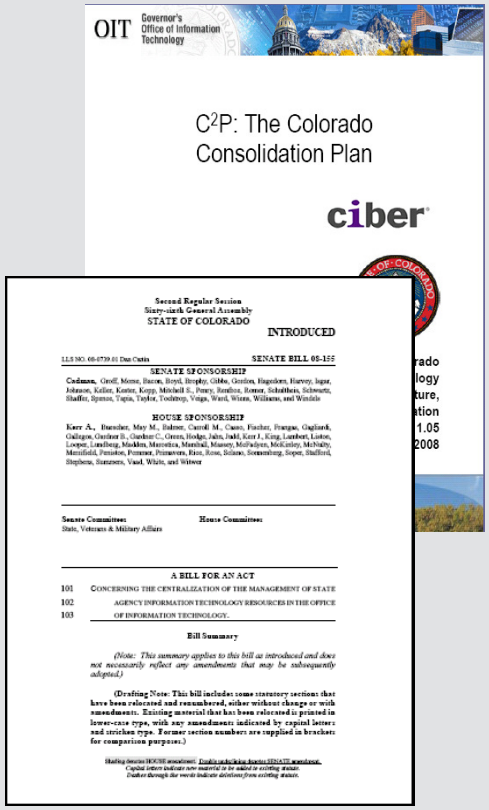


Geospatial Information Coordinating Council

- Representation from state agencies, counties, municipalities, federal agencies, private sector and universities
- Roles
  - Advise CIO in developing statewide spatial data infrastructure ...
  - Represent and promote statewide interests and requirements for geospatial data and technologies ...
  - Recommend effective strategies to share and integrate spatial data across all levels of government, ...
  - Promote cross agency cooperation and recommend cost sharing and collaborative arrangements for more efficient and effective service delivery...
  - Serve as a forum for and promote the exchange of expertise and ideas ...

Banding – IT Consolidation Process

- Skills assessments
- Reorganization plan
- Service definitions (ITSM)
- Service baselines
- Service catalog
- Asset discovery and enterprise management
- Optimize vendor agreements
- Service level agreements
- Indirect costing/shared services billing
- Enterprise IT Architecture



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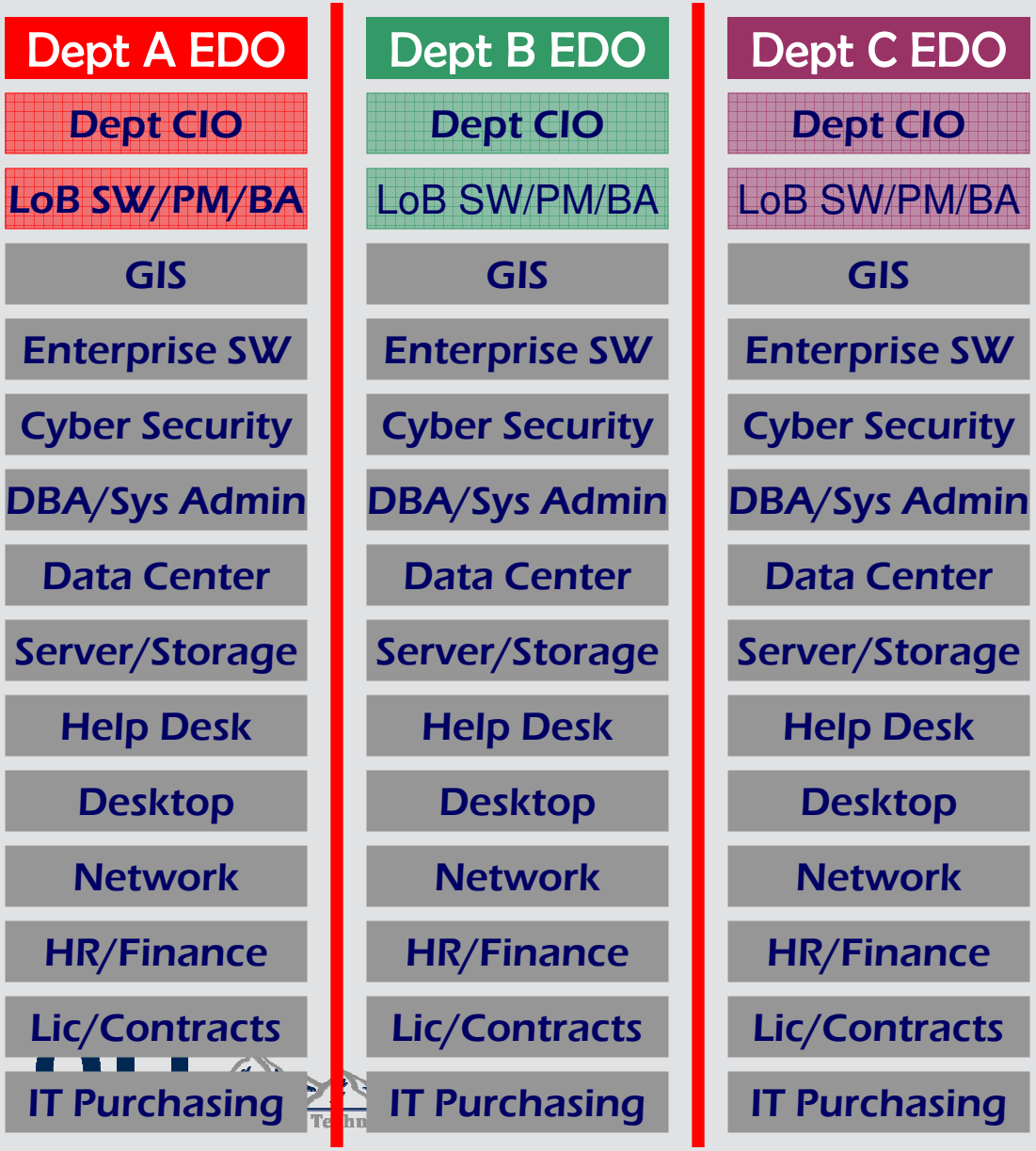
Old State IT Structure



- Dept CIO reports to Dept EDO
- All IT functions replicated in each department stove pipe structure
- Limited cross department coordination or collaboration
- Limited "enterprise" approach
- Limited state-wide procurement leverage
- Disparate infrastructure

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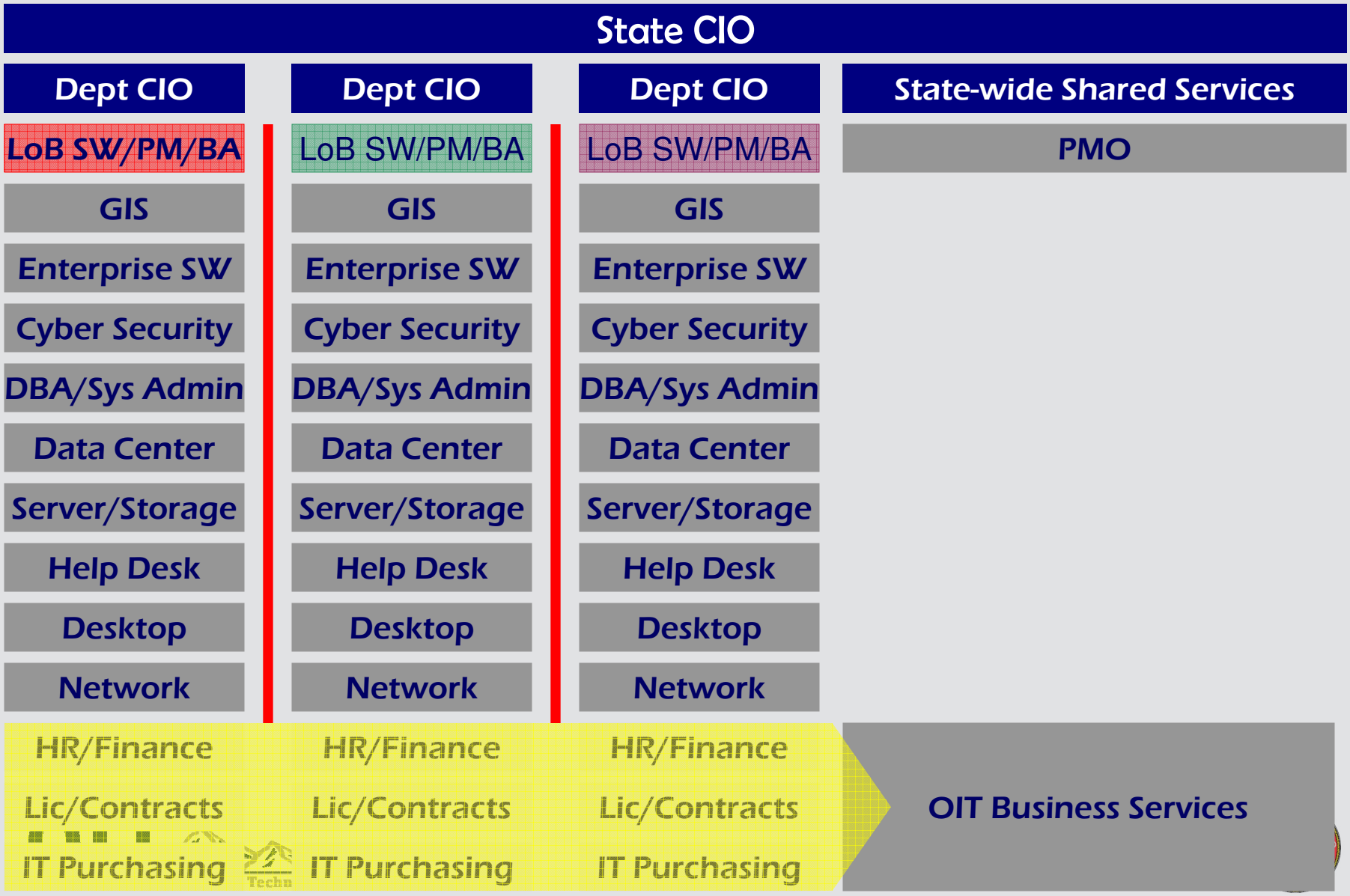
Develop OIT PMO & Business Services



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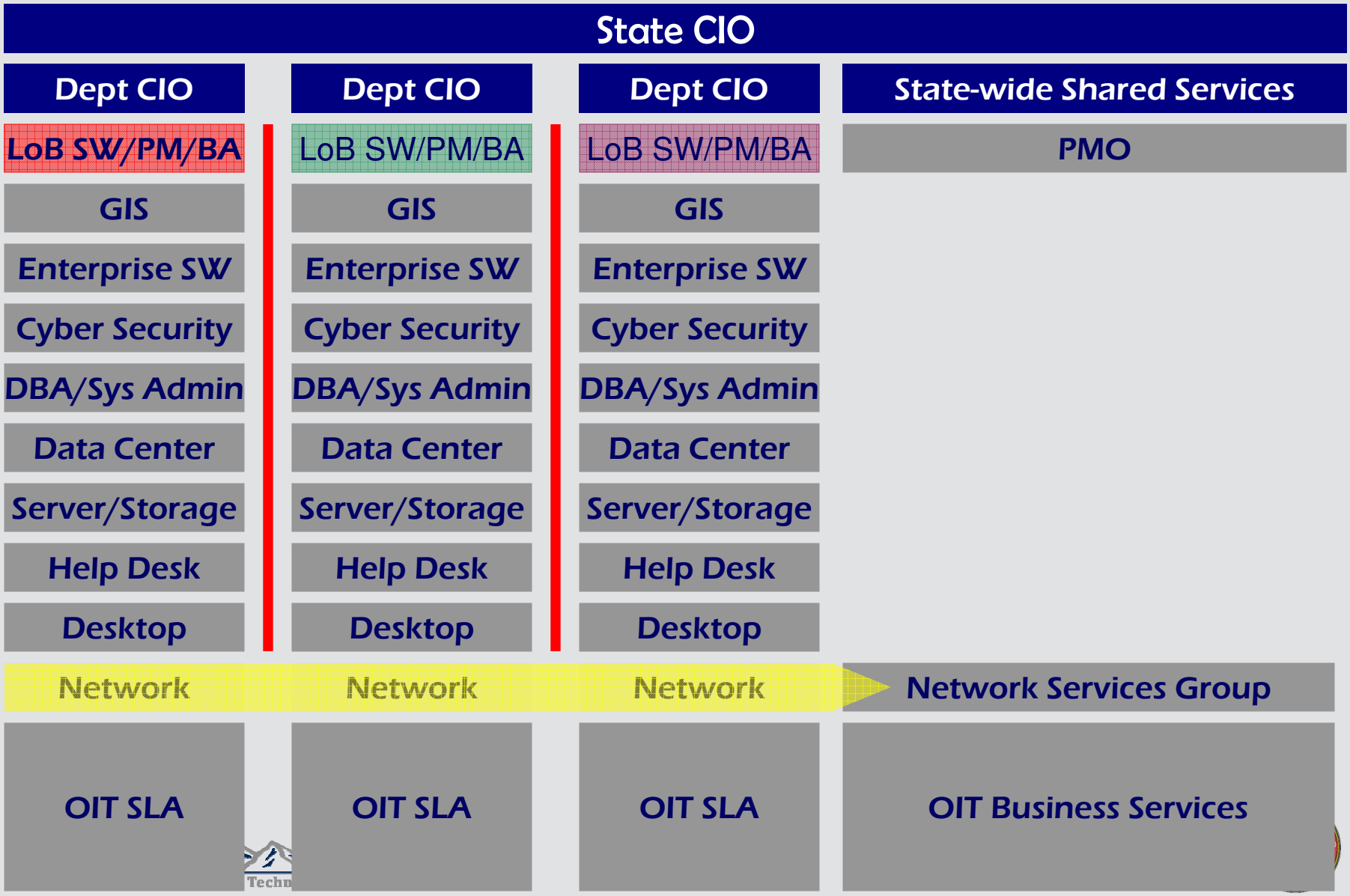
IT Band – Network Services



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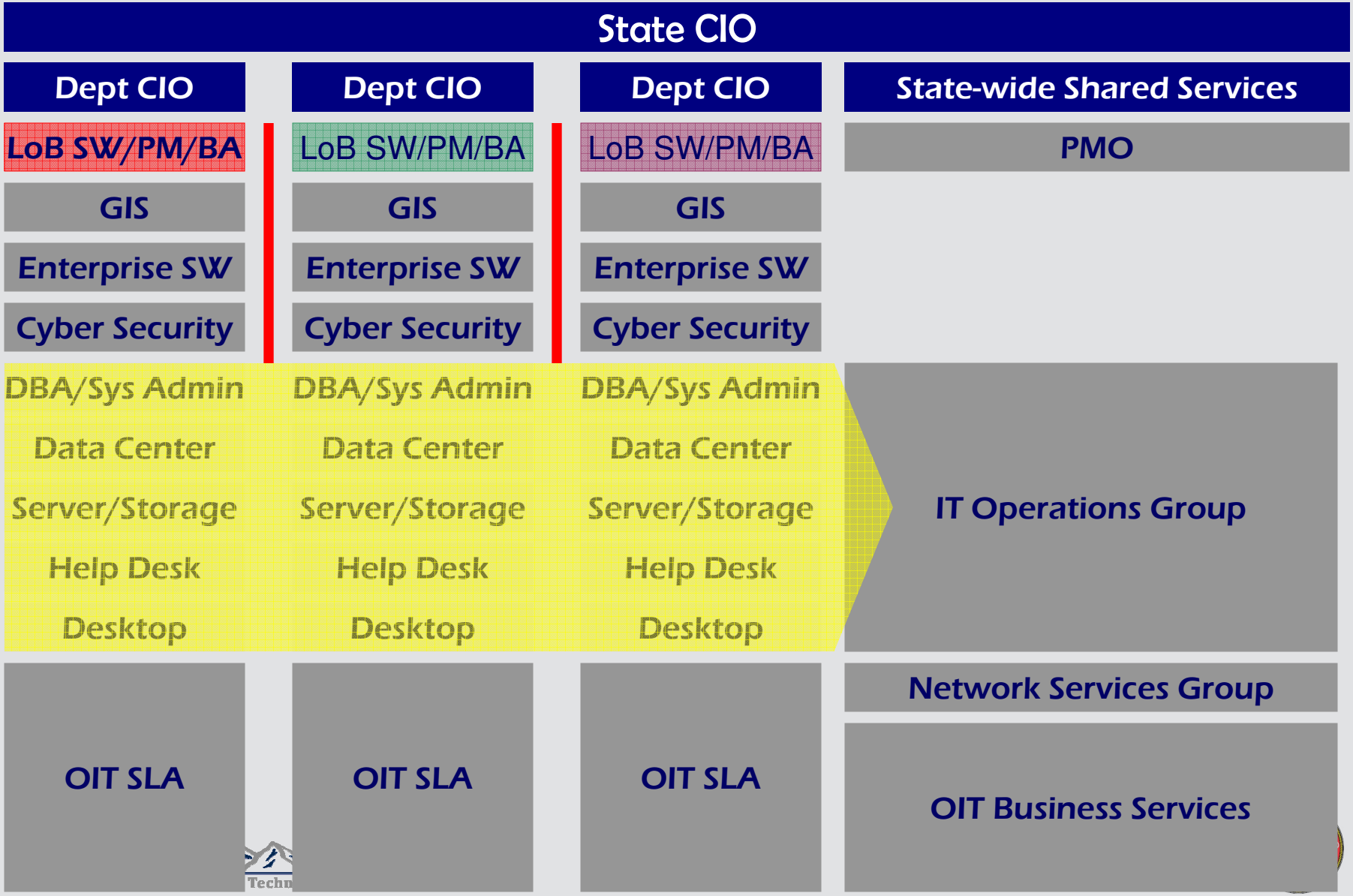
IT Band – **IT Operations**



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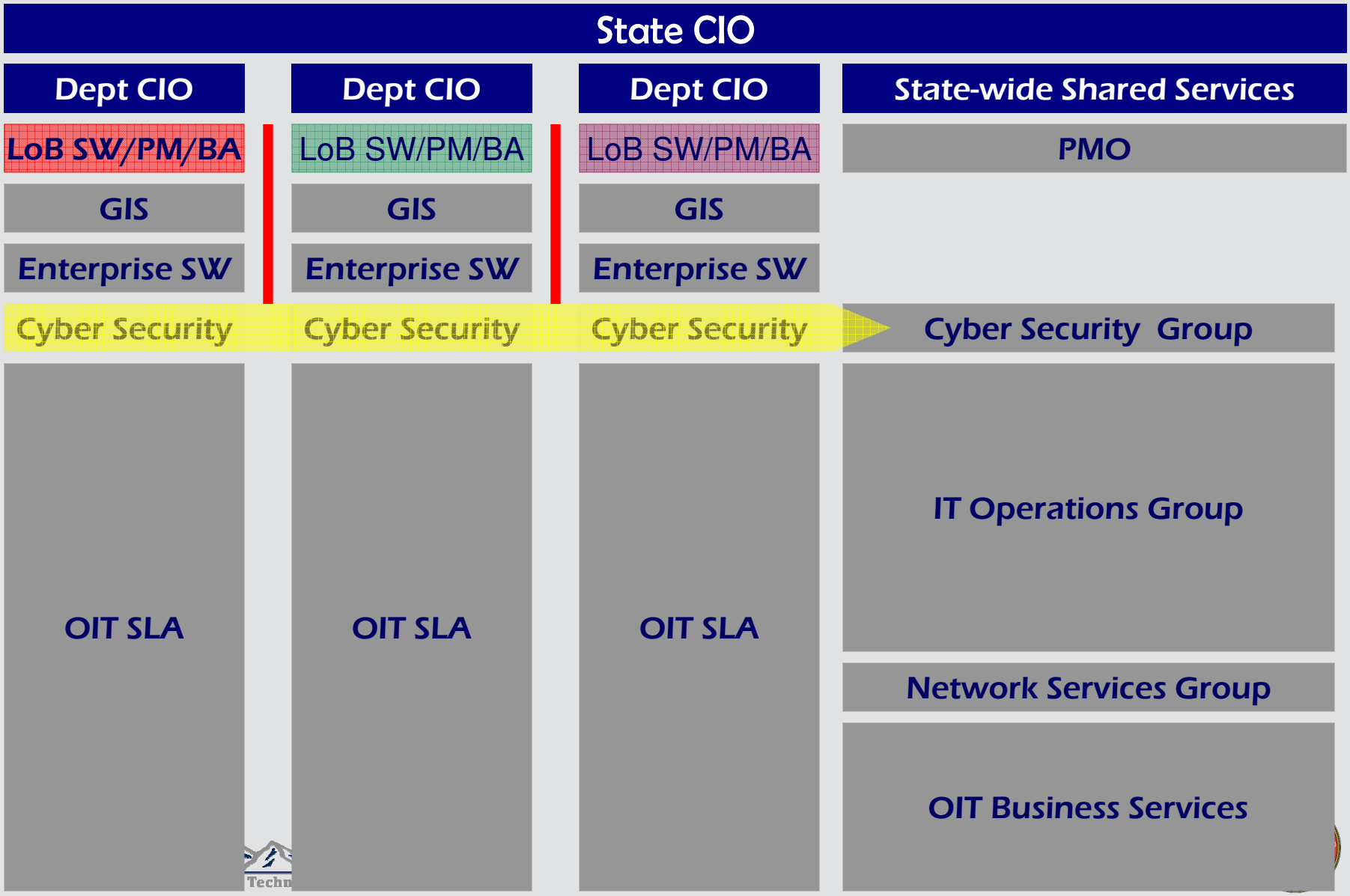
IT Band – IT Cyber Security



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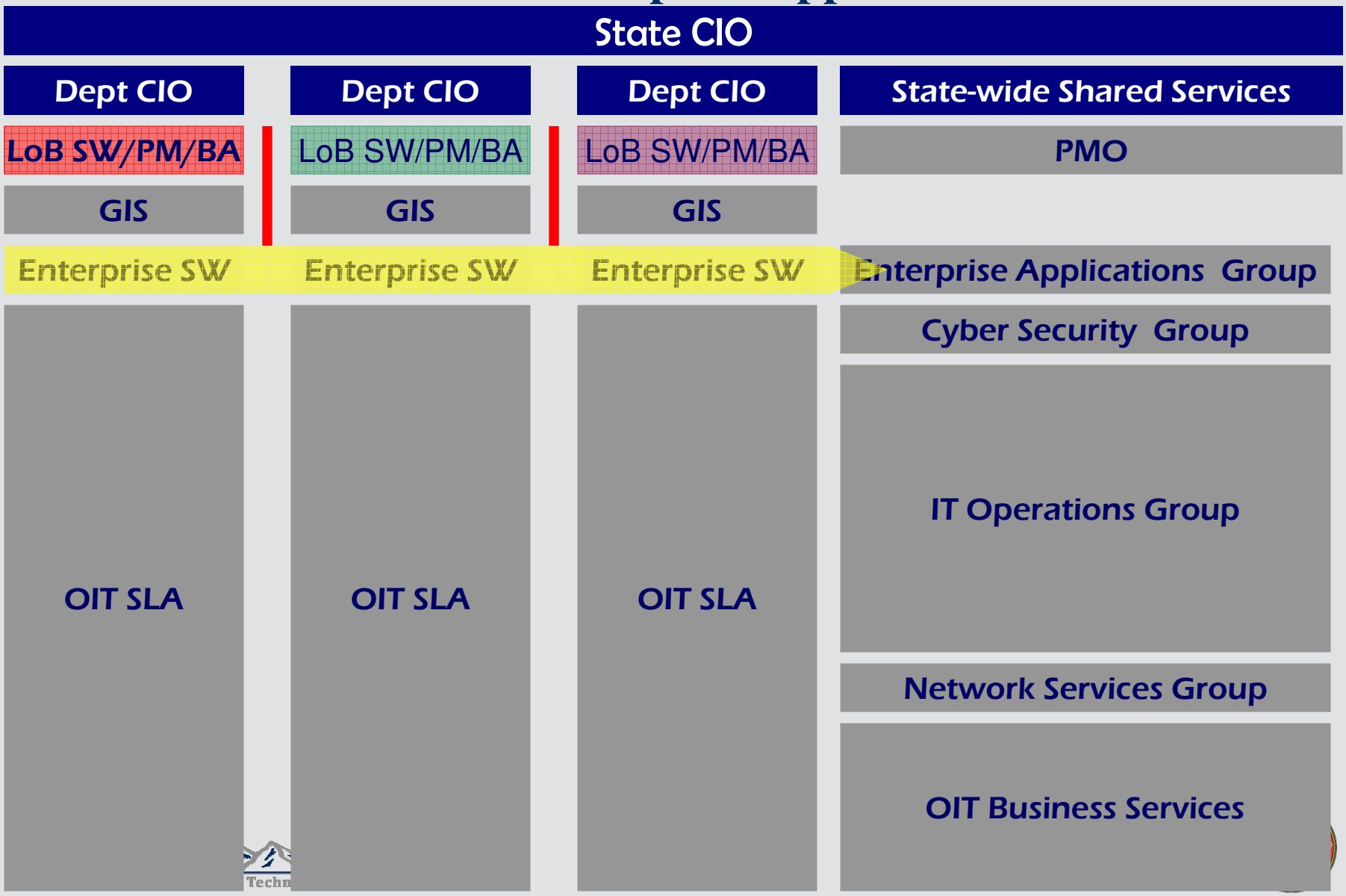
IT Band – Enterprise Applications



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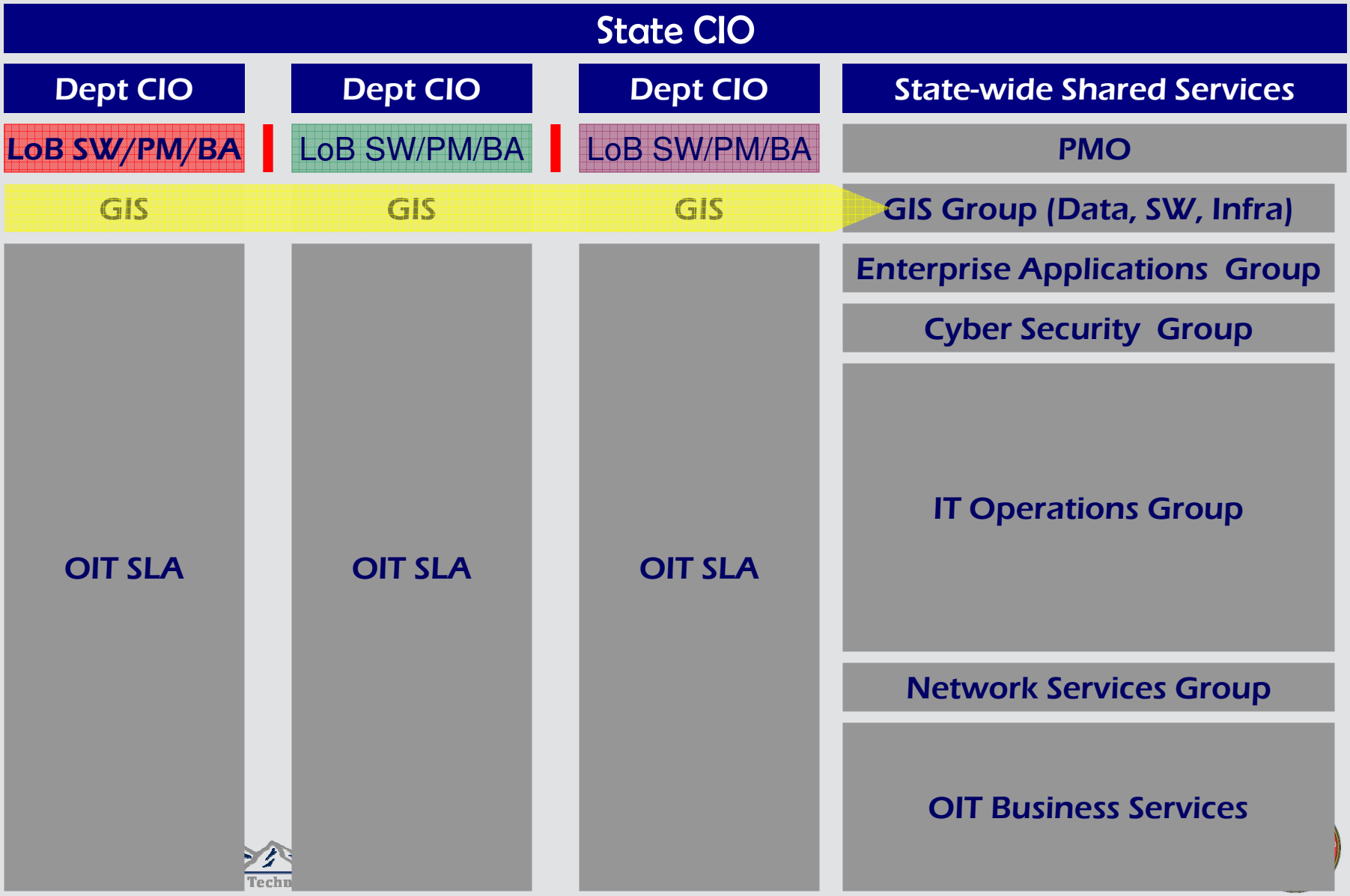
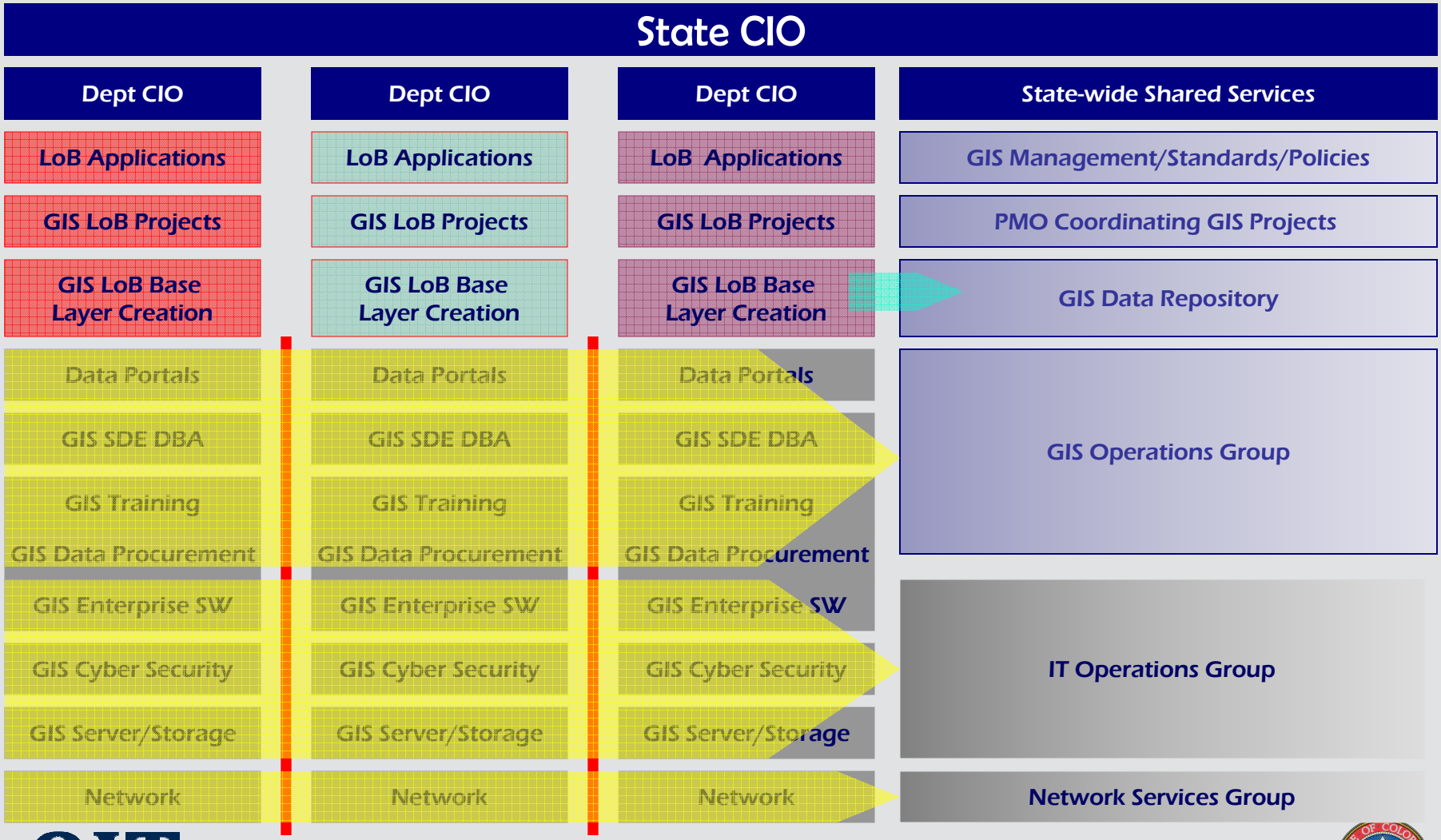
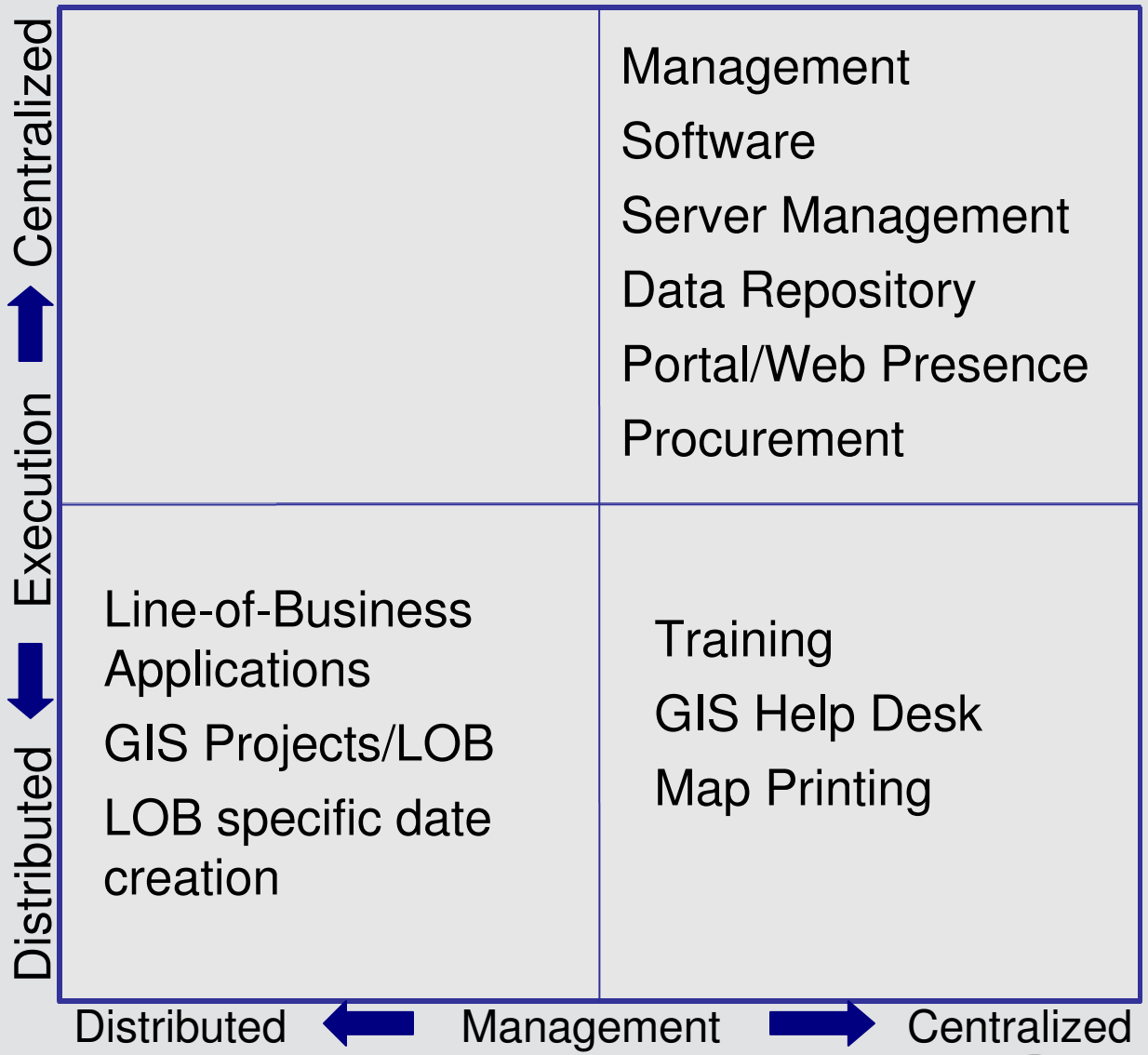
IT Band – **GIS**



Second Level Banding for GIS



State staffing is a single chain of command that centralizes common functions to *reduce costs* & distributes business specific functions to *maximize service to the lines of business*



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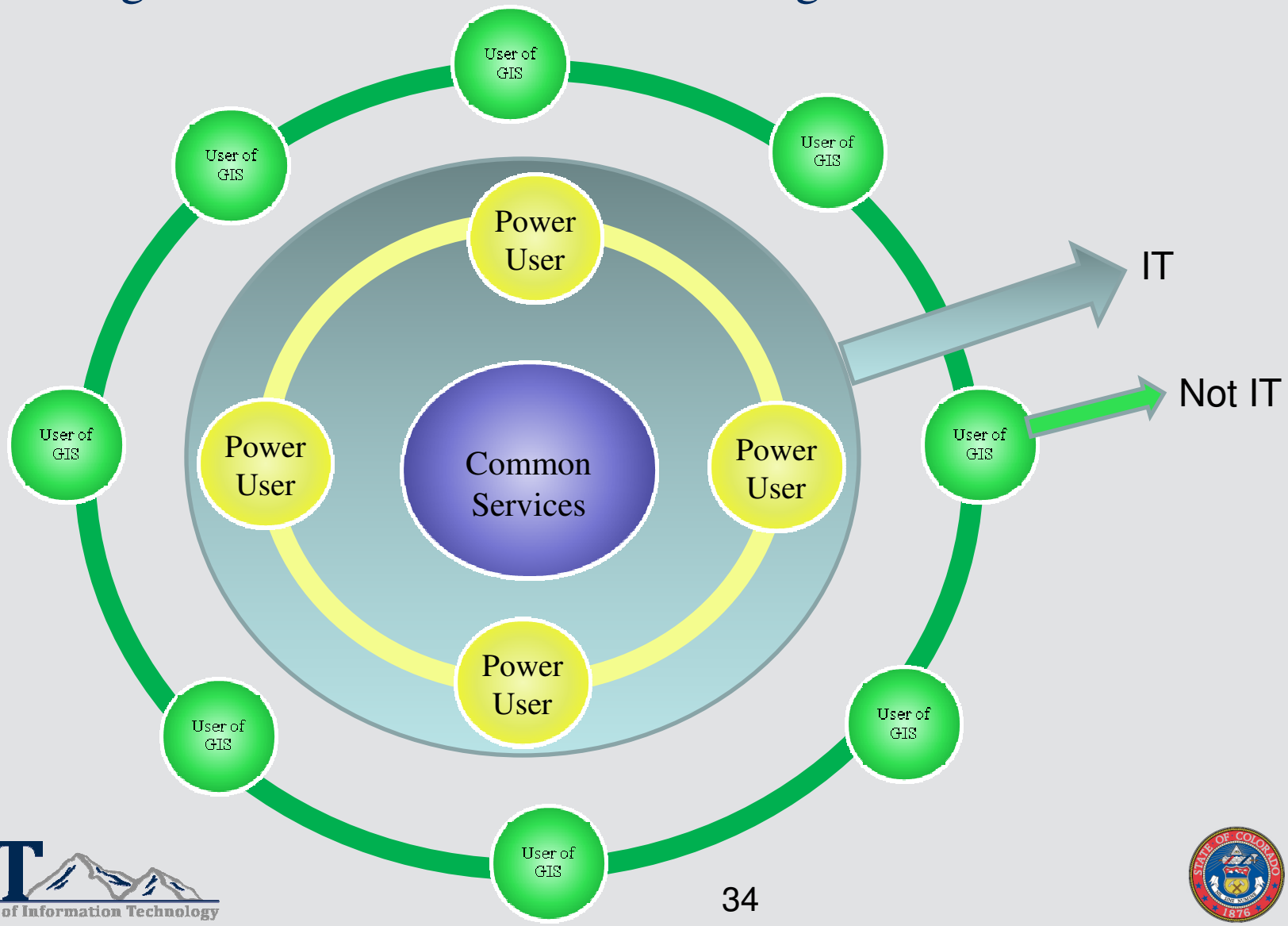
Delineating GIS IT Professionals from "ologists"



GIS Common/Centralized Services

Central Management/Central Execution

Management

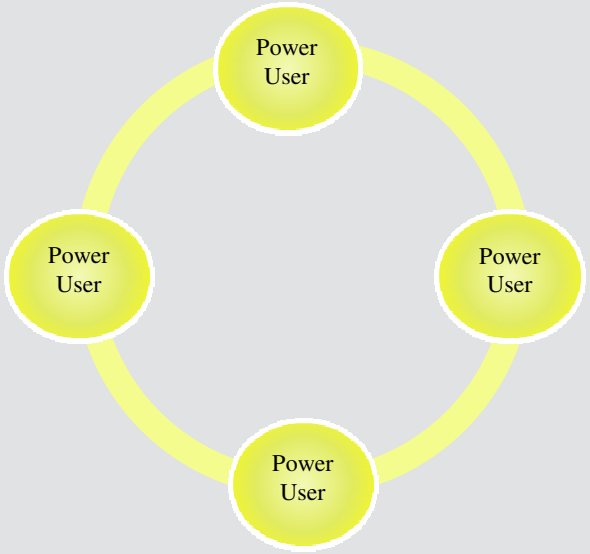
- Project management
- Supervision
- Software /hardware inventory, use tracking and analysis
- Cross departmental project coordination
- Approvals of software/hardware and service purchases

Operations

- Server administration
- Web site/portal/web services administration
- Geo DB (SDE) administration
- Base (framework) data administration

Coordination

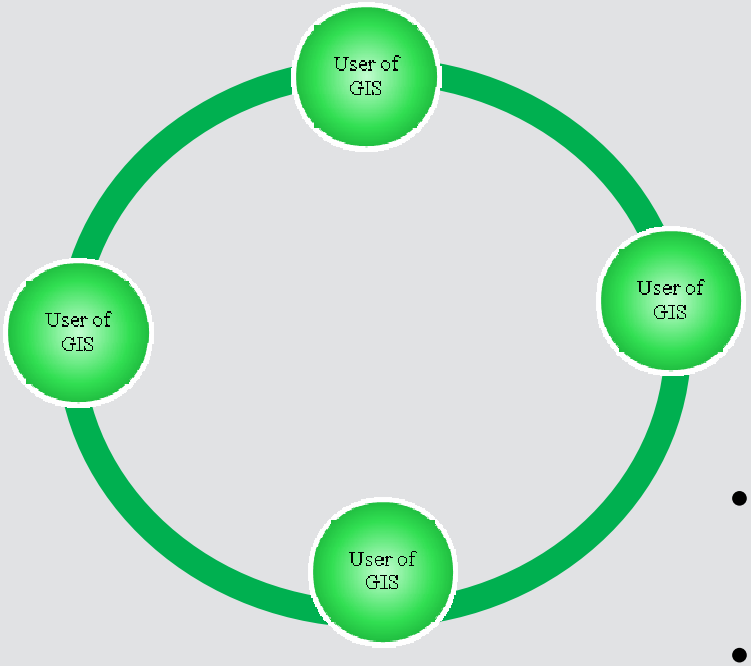
- Local/Federal
- Grants
- Data procurement
- Best practices/standards



Line of Business Uses w/Enterprise Applicability

Central Management/Distributed Execution

- Base data creation
- Maintenance of data for specific Lines-of-Business
- LOB user community education
- LOB specific application development
- Data processors/integrators (imagery etc)
- Non-State user community relations (ex. NHD)



LOB-specific Use of Geospatial Info. ("ologists")

Distributed Management/Distributed Execution

- Use of base data to do projects for business
- Use of GIS to make maps
- Use of web sites to enter spatial data
- Use of GPS units to collect spatial data

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Duties	GIS Manager	Enterprise System Admin (SDE, SQLServer)	GIS LOB Applications Programmer	GIS LOB Database Analyst	Cartographer/ Technician	Shared or Dedicated Resource	IT or Non-IT
Management							
Supervision of GIS staff	X					Shared	IT
Coordination of projects within the Division			X	X		Dedicated	Non-IT
Coordination of projects within the Department	X					Shared	IT
Coordination of projects between Departments	X					Shared	IT
Coordination of projects outside State Gov	X					Shared	IT
Budget Planning	X					Shared	IT
Financing (Grants/Decision Items)	X					Shared	IT
Manges Licensing	X					Shared	IT
Manages purchases of spftware and/or data	X					Shared	IT
Business Analysis and Needs Requirements	X		X	X		Shared	IT
Policy creating, managing, enforcing	X					Shared	IT
Standards creating, manage, enforcing	X					Shared	IT
Manage Data Portal	X	X				Shared	IT
Troubleshooting ArcGIS Server		X				Shared	IT
Configuring geoprocessing services		X	X			Shared	IT
Configuring a production ArcGIS Server system		X				Shared	IT
Setting up ArcGIS Server for the Internet		X				Shared	IT
Install, Configure ArcIMS		X				Shared	IT
Database Administration							
ArcSDE installation: Evaluating the Oracle server configuration; Preparing Oracle or SQLServer to use ArcSDE; Installing ArcSDE; Starting and stopping the ArcSDE server; Exploring ArcSDE system tables.		X				Shared	IT
Data loading: Creating storage space; Creating users and assigning privileges; Customizing storage with the DBTUNE table		X				Shared	IT
Monitoring data access: Creating application server and direct							

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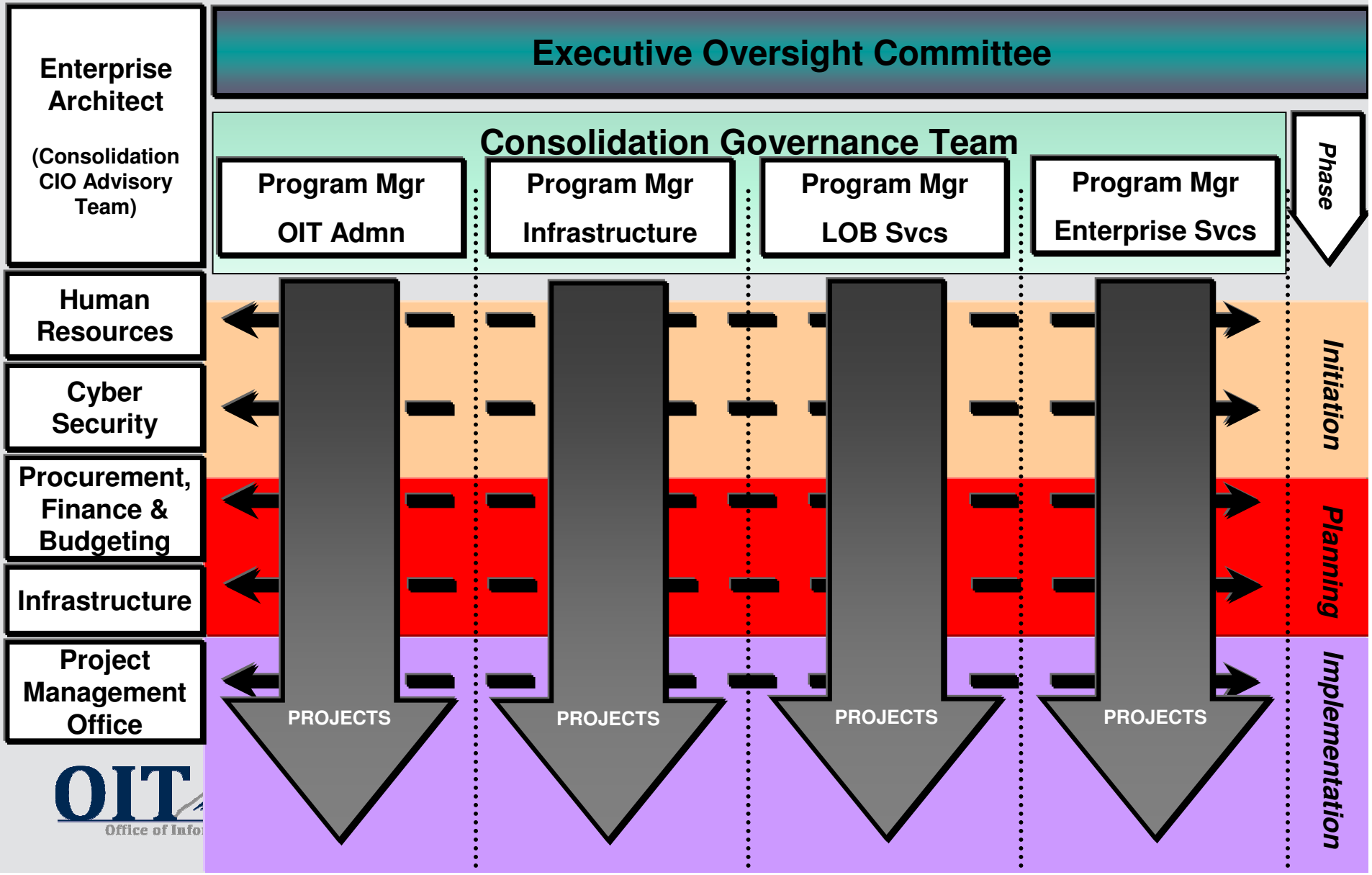
Consolidation Governance Structure



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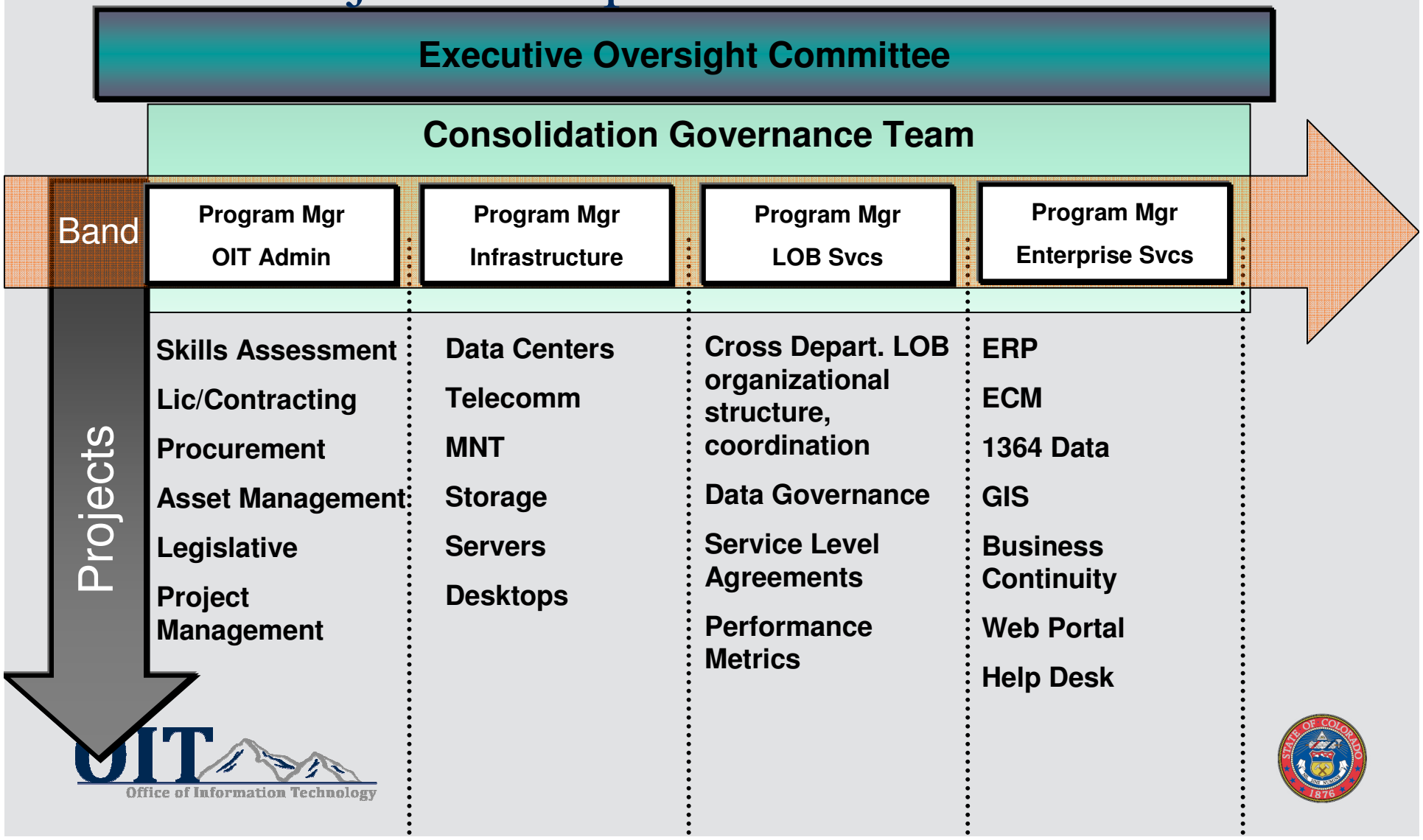
Consolidation Governance Structure
Project Examples within Bands



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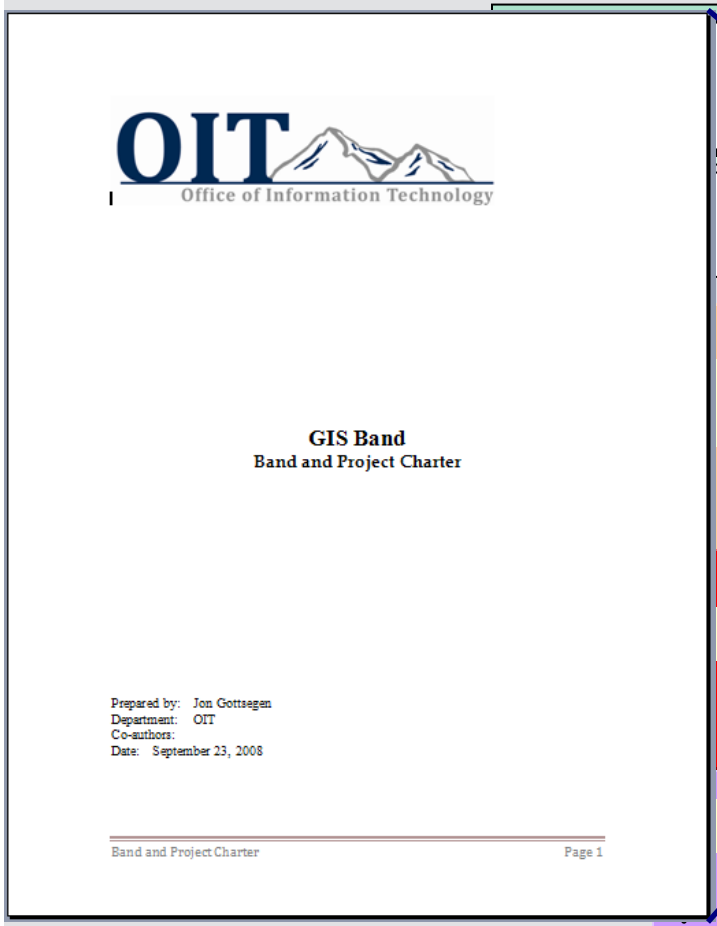
Project Flow

Executive Oversight Committee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GIS Band
Band and Project Charter

Prepared by: Jon Gottsegen
Department: OIT
Co-authors:
Date: September 23, 2008

Band and Project Charter Page 1

Program Mgr
Enterprise Svc's

CGT

Actions

Phase

Project A
Kick –Off

Assign a PM and build team from across many departments. Define high level goals

Initiation

Charter & Recommendation

Define Charter. Perform data gathering. Perform cost, risk and duration estimating.

Deliverable is a recommendation to EOC for GIS Consolidation, with inventories and estimates.

Planning

Plan Project

Create the detailed Project Plan

Deliver it to the Enterprise Svc's Manager for execution.

Implementation

Execute Plan

With newly consolidated staff, execute the plan.

PROJECTS

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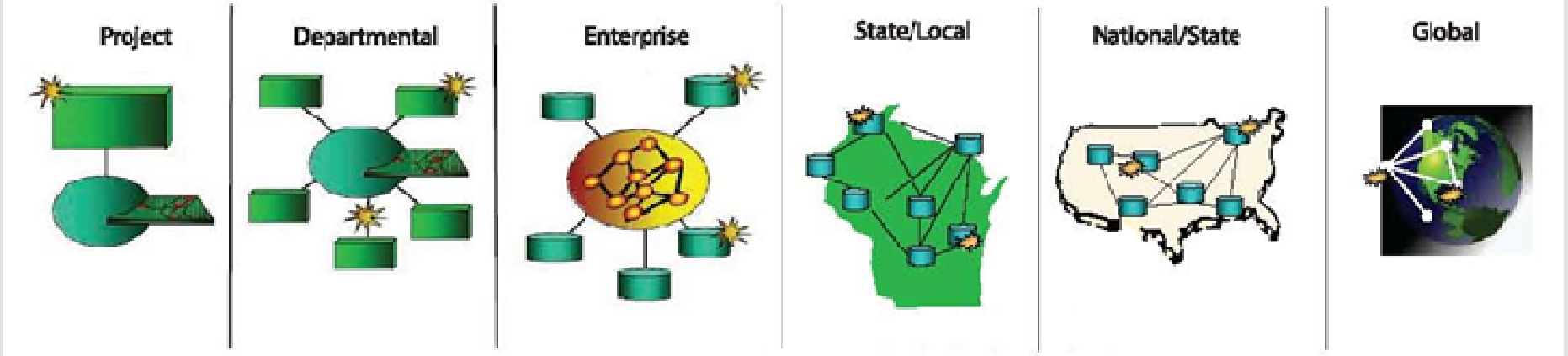
Where we are today?

Colorado has some agencies that are close to the departmental level of evolution, however most are still in the "project" phase which is "siloed within silos".



Evolution of Geospatial Collaboration in the Government Community[13]

Source - NASCIO

Our goal is to achieve the State/Local level.

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Thank you.

Jon Gottsegen
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